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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/820,392

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Lauturell 49-16 P24,627 U

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EXAMINER

PHAM, TUAN

ART UNIT	PAPER NUMBER
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2643

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DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/820,392

Applicant(s)

SINDALOVSKY ET AL.

Examiner

TUAN A PHAM

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,7-12 and 16-23 is/are rejected.
- 7) ☒ Claim(s) 2-6 and 13-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greaves (U.S. Patent No. 5,408,529) in view of Djadi et al (U.S. Patent No. 6,661,892, hereinafter, "Djadi").

**Regarding claim 1**, Greaves teaches a detector for detecting a signal at a signaling frequency on a transmission line carrying a communication signal

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comprising signaling frequencies and noise (see figure 1, tone detector, col.2, ln.5-15), the detector comprising:

a resonator having an input configured for coupling to the transmission line to receive the communication signal, an output for outputting a resonated signal (see figure 1, resonator 30, col.3, ln.30-40), and

a comparator coupled to the output of the resonator for comparing a first value of the resonated signal at the output of the resonator configured in the first state to a second value of the resonated signal at the output of the resonator configured in the second state, the comparator generating an indicator based on the comparison (see figure 1, comparator 44, col.3, ln.30-49).

It should be noticed that Greaves fails to clearly teach a controller coupled to the control of the resonator for configuring the resonator in a first state corresponding to the signaling frequency and in a second state corresponding to a reference frequency. However, Djadi teaches such features (see figure 4, DSP control unit 130, col.5, ln.1-20) for a purpose of controlling the resonance frequencies.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of controller coupled to the control of the resonator for configuring the resonator in a first state corresponding to the signaling frequency and in a second state corresponding to a reference frequency, as taught by Djadi, into view of Greaves in order to conserve energy in tone detector.

**Regarding claim 7,** Greaves teaches a tone detector for detecting the presence of a signaling tone on one of a plurality of potential signaling tone frequencies on a telephone line carrying a communication signal (see figure 1, tone detector, col.2, ln.5-15), the tone detector comprising:

a resonator having an input configured for receiving the communication signal, a control for configuring the resonator, and an output for outputting a resonated signal which is partially dependent on the configuration of the resonator (see figure 1, resonator 30, col.3, ln.30-40).

It should be noticed that Greaves fails to clearly teach a state machine (i.e., DSP control unit) coupled to the resonator for configuring the resonator and processing the resonated signal generated by the resonator to produce an indicator. However, Djadi teaches such features (see figure 4, DSP control unit 130, col.5, ln.1-20) for a purpose of controlling the resonance frequencies.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of a state machine (i.e., DSP control unit) coupled to the resonator for configuring the resonator and processing the resonated signal generated by the resonator to produce an indicator, as taught by Djadi, into view of Greaves in order to conserve energy in tone detector.

**Regarding claims 8-9,** Djadi further teaches the tone detector wherein the state machine configures the resonator in a first state corresponding to a frequency of the signaling tone for a measurement period to obtain a first value, the state machine configures the resonator in a second state corresponding to a

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reference frequency for another measurement period to obtain a second value, and the state machine compares the first value to the second value to generate the indicator if the first value exceeds the second value by a predefined amount (see col.5, ln.8-46).

**Regarding claim 10**, Greaves further teaches the tone detector further comprising: a low pass filter coupled between the telephone line and the resonator for filtering out frequencies above a desired frequency to reduce noise and aliasing; and an analog-to-digital converter coupled between the low pass filter and the resonator for converting analog signals on the telephone line to digital signals for processing by the resonator and the state machine (see figure 1, encoded DTMF tone, figure 6, low frequency band reject filter 122, col.3, ln.45-49, col.4, ln.7-15).

**Regarding claim 11**, Greaves further teaches the tone detector wherein the state machine comprises: a running maximum circuit (i.e., tone detect) coupled to the output of the resonator for detecting the first value and the second value during the measurement periods (see figure 4, col.7, ln.45-59).

**Regarding claim 12**, Djadi further teaches the tone detector wherein the tone detector further comprises: a counter coupled to the state machine for determining the measurement periods (see figure 4, counter 140).

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3. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Couet (U.S. Patent No. 5,828,266) in view of Greaves (U.S. Patent No. 5,408,529).

**Regarding claim 17,** Couet teaches a method for detecting the presence of a signaling tone on one of a plurality of potential signaling tone frequencies in a communication signal on a transmission line comprising the steps of:

(2) configuring the resonator to resonate at one of the potential signaling tone frequencies (see col.6, ln.25-67),

(3) capturing and storing a first value output by the resonator configured to resonate at the one of the potential signaling tone frequencies (see col.6, ln.25-67),

(4) configuring the resonator to resonate at a reference frequency (see col.5, ln.18-50),

(5) capturing and storing a second value output by the resonator configured to resonate at the reference frequency (see col.3, ln.5-25, col.6, ln.25-67, col.7, ln.1-40),

(6) comparing the first value to the second value (see col.3, ln.5-25, col.6, ln.25-67, col.7, ln.1-40), and

(7) generating an indicator indicating whether the first value exceeds the second value by a predefined amount (see col.3, ln.5-25, col.6, ln.25-67, col.7, ln.1-40).

It should be noticed that Couet fails to clearly teach receiving the communication signal at a resonator. However, Greaves teaches such features

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(see figure 1, resonator 30, input Ain, col.3, ln.7-18) for a purpose of receiving the signals from communication line.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of receiving the communication signal at a resonator, as taught by Creaves, into view of Couet in order to detected the difference frequency signals.

**Regarding claims 18 and 20**, Couet further teaches the method further comprising the step of repeating steps 2 through 7 for each of the plurality of potential signaling tone frequencies (see col.6, ln.20-67, col.7, ln.1-40). It should be noticed that Couet does not teaches repeating of steps. However, one of skill in the art would have known the repeating of step 2-7 of Couet's reference will be perform of the steps for each signaling tone frequencies.

**Regarding claim 19**, Greaves further teaches the method further comprising the steps of: filtering the communication signal to remove frequencies above a predefined amount; and converting the filtered communication signal from analog to digital; wherein the filtering and converting are performed prior to being received by the resonator (see figure 1, col.3, ln.29-49).



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4. Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greaves (U.S. Patent No. 5,408,529) in view of Djadi et al (U.S. Patent No. 6,661,892, hereinafter, "Djadi") as applied to claim 7 above, and further in view of Couet (U.S. Patent No. 5,828,266).

**Regarding claim 16**, Greaves and Djadi, in combination, fails to clearly teach the tone detector further comprising: a memory for storing information, the memory comprising data for use by the state machine to configure the resonator. However, Couet teaches such features (see figure 3, memory, col.5, ln.29-34) for a purpose of storing the tone frequency signals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of a memory for storing information, the memory comprising data for use by the state machine to configure the resonator, as taught by Couet, into view of Greaves and Djadi in order to stored the information for the next operation.

5. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Couet (U.S. Patent No. 5,828,266) in view of Greaves (U.S. Patent No. 5,408,529) as applied to claim 17 above, and further in view of Djadi et al (U.S. Patent No. 6,661,892, hereinafter, "Djadi").

**Regarding claim 21**, Couet and Creaves, in combination, fails to clearly teach the method wherein the indicator is an interrupt used to wake a processor from a low power mode. However, Djadi teaches such features (see col.4, ln.30-41) for a purpose of detecting tone on telephone lines.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of the method wherein the indicator is an interrupt used to wake a processor from a low power mode, as taught by Djadi, into view of Couet and Creaves in order to conserve the power and reduced the amount of heat in the DSP.

**Regarding claim 22**, Djadi further teaches the method wherein steps 2, 3, 4, and 5 are performed serially (see col.4, ln.30-42).

**Regarding claim 23**, Djadi further teaches the method wherein steps 2, 3, 4, and 5 are performed in parallel (see col.4, ln.30-42).

#### ***Allowable Subject Matter***

6. Claims 2-6, and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### **Conclusion**

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In order to expedite the prosecution of this application, the applicants are also requested to consider the following references. Although Kitchin et al. (U.S. Patent No. 5,339,812), Kitchin et al. (U.S. Patent No. 5,319,702), Druilhe (U.S. Patent No. 5,659,606), and Liang et al. (U.S. Patent No. 6,704,400) are not applied into this Office Action, they are also called to Applicants attention. They may be used in future Office Action(s). These

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references are also concerned for supporting the system and method for detecting an attempted three way conference call on a remote telephone and processing digital signals and detecting telephone tones.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Tuan A. Pham** whose telephone number is (703) 305-4987. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Curtis Kuntz can be reached on (703) 305-4708 and **IF PAPER HAS BEEN MISSED FROM THIS OFFICIAL ACTION PACKAGE, PLEASE CALL Customer Service at (703) 306-0377 FOR THE SUBSTITUTIONS OR COPIES.**

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Crystal Drive, Arlington VA, Sixth Floor (Receptionist, tel. No. 703-305-4700).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

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April 17, 2004

Examiner

Tuan Pham

  
CURTIS KUNTZ  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600